APPLICATION

FOR

UNITED STATES LETTERS PATENT

TITLE: CLEARING SYSTEM FOR AN ELECTRONIC-BASED
          MARKET

APPLICANT:

CLEARING SYSTEM FOR AN ELECTRONIC-BASED MARKET

BACKGROUND

This invention relates to trading systems.

A traditional futures exchange is a membership structure

5   that allows trading only through members. Traditional markets have customers, members and clear members. The financial backing of a traditional exchange is also through members. Members provide capital and when a trade is completed a clearing member will back the trade. Some exchanges only allow their clearing

10   members to trade. Other exchanges allow any person to trade as long as a clearing member backs the person. That is, a clear member can have customers that have accounts with the clear member. The customer uses the credit of the clear member to trade and the customer does not have direct access to the market.

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SUMMARY

According to an aspect of the present invention, a method of clearing transactions on an electronic exchange includes performing a full settlement run after cessation of trading,

20   automatically marking-to-market all open positions and determining margin requirements.

According to an additional aspect of the present invention, a computer program product residing on a computer readable medium for clearing transactions on an electronic exchange includes

25   instructions for causing a computer to perform a full settlement run after cessation of trading, automatically mark-to-market all open positions and determine margin requirements for market participants.

According to an additional aspect of the present invention,

30   a system for clearing transactions on an electronic exchange, includes a computer system that is fed information regarding trades, current prices for products traded on the exchange,

information regarding margin available in a trading account and margin requirements for a contract genus. The system also includes a process that executes on the compute system, including a computer program product residing on a computer readable medium

5   for clearing transactions on the electronic exchange. The product comprising instructions for causing the computer to perform a full settlement run after cessation of trading, automatically mark-to-market all open positions, and determine margin requirements for market participants.

10   One or more of the following advantages may be provided by one or more aspects of the invention.

Aspects of the invention are directed to clearing transactions in electronic markets that trade contracts to buy and sell goods. The clearing system minimizes the incidence of

15   credit-induced financial losses, contains losses once they are identified, and ensures continuous market function and financial integrity. The system minimizes the likelihood that a particular participant will fail to meet its obligations to the exchange.

BRIEF DESCRIPTION OF THE DRAWINGS

20   FIG. 1 is a block diagram of an electronic-based futures exchange.

FIG. 2 is a diagram depicting a system architecture for the market of FIG. 1

25   FIG. 3 is a diagram depicting a data structure for a trading account.

FIG. 4 is a flow chart depicting an account process flow.

FIG. 5 is a diagram depicting relationship between contract species and a contract genus.

30   FIG. 6 is a flow chart of a contract authoring process.

FIGS. 7A-7D are diagrams of graphical user interfaces/screens used in the system of FIG. 1.

FIG. 8 is a flow chart of an order matching process.

FIG. 9 is a flow chart of a multi-species order matching process.

FIG. 9A is a flow chart of a multi-species order offset process.

FIG. 10 is a block diagram of details of a risk management system.

FIG. 11 is a block diagram of details of a clearing system.

FIG. 12 is a flow chart of an asset-based margin protocol.

FIG. 13 is a flow chart of a liquidation process for defaults.

FIGS. 14-16, 17A, 17B are flow charts of exemplary processes used in the market.

FIG. 18 is a flow chart showing an example of a liquidation process for defaults.

FIG. 19 is a block diagram that depicts an exemplary system architecture including a layered set of network and application-level systems.

DESCRIPTION

Referring to FIG. 1, an electronic market 10 or exchange that trade contracts to buy and sell goods is shown. One example of the market is embodied as an electronic futures market. However, in addition to traditional futures type trading in commodity futures trading in contract of other products, instruments and services is possible.

The electronic futures market or exchange 10 has three defined relationships between market participants and the

exchange 10. The relationships are represented as market participants that include a subscriber 12, guarantor 14, and trader 16. The market participants interact through a system 11. All three types of market participants have contractual

5 relationships with the exchange 10 and are screened by an accrediting agency, e.g., the National Futures Association (NFA) for a US-based exchange (or equivalent) for disciplinary and financial soundness. Subscribers 12 identify one or more guarantors 14 who provide access to financial resources used for

10 margin. Subscribers also identify one or more traders 16 who are eligible to enter orders for the subscriber's benefit. In some instances the subscriber 12, guarantor 14, and/or trader 16 may be the same entity.

The system 11 will be described in more detail below.

15 Suffice it here to say that the system 11 includes computer systems 22 and storage devices 24 that store trading accounts 18 and the processes 25 used to implement the electronic futures exchange 10. The system 11 is accessed by the participants using the Internet or other protocols, as will be described below.

20 A subscriber 12 is the economic beneficiary of the trading that occurs on its behalf. Subscribers 12 may be natural persons or other legal entities. All subscribers 12 are subject to the provisions of an exchange subscriber agreement. Subscribers 12 identify assets acceptable to the exchange 10 that can be used

25 for margin to support positions. The exchange 10 maintains at least one trading account 18 for each subscriber. The trading account 18 identifies the subscriber's positions and the assets used to support the positions. Subscribers 12 may have multiple trading accounts for multiple guarantors (not shown). Examples

30 of subscribers 12 might include a customer of a futures

commodities market (FCM), a corporation or financial institution, or a commodity pool. Positions held by a subscriber are associated with the exchange subscriber trading account 18. Each subscriber trading account 18 will also identify assets that

5   provide margin for the positions held in that account. Positions are determined by product species that a trader 16 can trade on.

The second entity in the exchange 10 is a guarantor. A guarantor maintains the assets of the subscriber and makes those assets available to exchange 10. Guarantors 14 are credit-worthy

10   entities. All guarantors 14 are subject to provisions of an exchange guarantor Agreement. The guarantor 14 gives the exchange 10 control over the assets in a subscriber's trading account 18. In particular, exchange 10 has the right to satisfy all margin obligations by contacting the guarantor and demanding

15   payment. Failure of the guarantor 14 to provide timely payment would constitute a default on the part of the subscriber. Guarantors 14 can restrict the markets traded by a subscriber. Examples of a guarantor might include an FCM, bank, credit card facility, other financial institution, or a large corporation.

20   In some instances the guarantor may be a subscriber.

A subscriber can maintain the trading account 18 and assets at a registered FCM, where the subscriber's funds will be segregated in accordance with CFTC requirements. In this case, the FCM will be considered the guarantor of its subscriber's

25   trading account 18. A subscriber's trading account 18 can be guaranteed by a third-party, credit worthy institution, including a bank, broker dealer, or corporate entity. The guarantee relationship can be documented by a letter of credit or comparable agreement that allows the exchange 10 to have recourse

30   against the guarantor in the event that the subscriber fails to

perform its financial responsibilities, including initial margin and variation margin obligations up to a specified limit.

A self-guaranteeing subscriber is a corporation or other entity that has sufficient credit worthiness to bear the financial obligations of trading without requiring a third party's guarantee. The exchange 10 or other entity performs financial surveillance of self-guaranteeing subscribers 12 in order to maintain a high level of confidence and to deter abuse. A class of self-guaranteeing subscriber is the fully paid long subscriber. This subscriber deposits assets equal to the full-face amount of its futures positions at an exchange depository. This form of self-guarantee is available for long market positions.

A third entity in the market is the trader 16. A trader 16 enters orders on behalf of a subscriber 12. Traders 16 are natural persons. Depending on the subscriber/guarantor relationship, either the subscriber or its guarantor authorizes a trader 16 to enter orders for a subscriber's trading account 18. Without such authorization, a trader 16 cannot enter orders in the exchange 10. Examples of traders 16 might include the subscriber, a commodity trading advisor, an FCM order-entry clerk, or an employee of the subscriber. Several subscribers 12 may authorize the same trader 16 (e.g., a commodity trading advisor). Also, several traders 16 may be authorized for the same subscriber (e.g., employees of a corporation). Each category of trader 16 will be identified so that exchange 10 and/or the National Futures Association can perform trade practice surveillance 19. Traders will have account access privileges, a trading profile, and trading limits 17 that are reflected in the trading account 18.

Referring now to FIG. 2, the exchange 10 uses the market structure 10 described above in an Internet-based on-line trading system 11 having real-time clearing 30 and risk management 32 functions. Because all three types of market participants are

5 known to the exchange 10, risk management 32, compliance and functions, 34 of the exchange 10 can be applied to any or all of the participant types.

The exchange 10 includes a trading system 40 that is accessible through secure sessions using Internet protocols.

10 Traders 16 securely access the exchange 10 via web browsers on client systems (not shown). Additionally, non-browser user interface clients (not shown) capable of communicating with the exchange trading system 60 may be used. Generally, subscribers 12 and guarantors 14 will not have access to the trading system

15 40 for trading purposes. However, for risk management purposes, subscribers 12 and guarantors 14 may authorize system access to individuals in their control with supervisory responsibilities.

The exchange 10 can permit a single trader 16 to have several sessions open at the same time. Once logged on, a trader

20 16 may enter orders for any trading account 18 for which the trader 16 has permission to trade. In addition to any contract genus trading restrictions imposed on the trading account 18 by the subscriber or guarantor, additional trader-level limits may be preset, including restrictions on the maximum net long, net

25 short, or quantity per order. These restrictions are supplemental to other risk management limitations imposed by the exchange risk management system 32 discussed below.

Referring to FIG. 3, a data structure 18' that represents a trading account 18 which is an internal exchange account is

30 shown. The data structure 18' representing the trading account

18 is stored on a computer readable medium that is accessible by the processes in FIG. 2, as will be described below. A trading account 18 has fields 18a, 18b used to identify both positions and assets for a subscriber. Each trading account 18 also has

5   fields 18c, 18d to associate the account 18 with a particular subscriber and guarantor, respectively. All trading activity for a subscriber flows through a trading account 18. The risk management system 32 verifies that sufficient assets are associated with the account to meet margin requirements for each

10   new position. Assets are associated with a trading account 18 and are used to meet margin requirements for a subscriber's positions. Assets may be limited to support specific exchange 10 product genera or delivery commitments. Thus, the trading account 18 can include fields 18e that represent constraints on

15   the assets, e.g., dedicated to particular produced genera or delivery commitments. Examples of assets include cash or cash equivalents on deposit with exchange 10, a segregated account held at an FCM, a letter of credit, or other financial institution guarantee. The trading account 18 can include

20   constraint fields 18f to identify the product genera that the trader 16 is authorized to trade.

Referring to FIG. 4, an account process flow 80 is shown. A subscriber submits 82 an application to the exchange 10. The subscriber identifies 84 a guarantor and the assets to be held by

25   that guarantor. The exchange 10 and/or a regulatory body, e.g., the NFA, reviews 85 the application. If accepted, the exchange 10 establishes 86 a trading account 18 (FIG. 3) for the subscriber. The guarantor enters 88 into an agreement with the exchange 10 that gives the exchange 10 control over the asset(s).

30   The subscriber or guarantor authorizes 90 a trader 16 to enter

orders for the subscriber and trading begins.

Referring to FIG. 5, contracts 110 for trading on the exchange 10 are shown. Contract markets available to subscribers 12 and their traders 16 are described by a contract genus 100.

5   The contract genus 100 identifies a particular commodity or market type (e.g., contracts on corn, cotton, or natural gas, benzene, and so forth). The contract genus includes global parameters 102 that are applicable to all contracts derived from the contract genus. Thus, a properly specified contract genus

10   encapsulates information necessary to operate risk management, market surveillance, trading, clearing, and delivery functions of the exchange 10. A contract genus definition 102 includes all parameters that are universally applicable to a contract (e.g., delivery method, underlying currency, price limits, speculative

15   position limits, speculative margin rates and so forth).

Each contract genus also includes one or more contract species 110a-110n. The contract species 110a-110n are the actual contracts traded. Contract species have global parameters 102 inherited from the contract genus 100 as well as additional

20   parameters 112a-112h that are specific to the species. The contract species 110a-110n define distinct positions in the subscriber's trading account 18. Species parameters 112 define various contract species that can be traded (e.g., contract month, degree-day base-city).

25   Some global parameters are inherited by each contract species but can be changed for each species individually. Examples of customized global parameters 104 include price limits, speculative position limits, speculative margin rates and so forth.

30   For example, exchange 10 can list a benzene futures genus.

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The exchange can define genus and species parameters to provide a market for the genus. To produce a contract for benzene, the exchange 10 provides three species parameters whose values are specified at order entry time (see TABLE 1 below):

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TABLE 1

PRODUCT GENUS: BENZENE*			
Type	**Parameter**	**Possible Values**	**Default Value**
Applies universally to all contract species	Delivery Method	Physical	N/A
	Base Currency	USD	N/A
Exchange can define separately for each contract species	Position Limit	5,000,000 gals	5,000,000 gals
	Daily Price Limit	$0.20 per gal	$0.20 per gal
Trader Selectable Trader selects at order entry time to define particular contract to be traded	Grade	astm 2359 astm 2359 lt astm 4734 astm zero d	astm 2359
	Delivery Location	Houston Corpus Christi	Houston
	Delivery Month	June 2000 July 2000 August 2000	July 2000

25   Contract Species permit listing of multi-parameter flexible contracts that can reflect particularized requirements of each market and market constituency. The exchange 10 includes a matching and clearing engine (described below) that permits matching of numerous types of orders across species to mitigate

30   any reduced liquidity that comes from greater contract customization. Multi-parameter contracts can provide benefits

including reduced basis risk, increased hedge efficiency, price discovery, and risk management even in low-volume markets.

Permission to trade a particular contract genus is enforced by the exchange risk management system 32. As mentioned, a

5 guarantor 14 can restrict a particular subscriber 12 to trade only select contract genera, and subscribers 12 may further restrict contract genera available to traders 16.

Referring to FIG. 6, a contract authoring process 120 produces contract species from a contract genus. The contract

10 authoring process 120 is used to produce new contracts that can be traded. A user decides on 122 a product genus and decides on 124 the listing rules for the product genus. The user decides 126 on species parameters that are associated with the product genus. The process 120 can use a wizard technique, e.g., a

15 series of dialog boxes or windows with controls to specify and select parameters. After a contract genus 122 has been defined, the particular items necessary to enable the trading of various contract species are enumerated. For example, the 'contract month' parameter might be enumerated as (June 2000, September

20 2000, December 2000, and March 2001), while the 'degree day base city' parameter is enumerated as (Atlanta, Chicago, New York). Species parameters for a product are given in Table 1. Orders can be entered for any of the above species.

In one embodiment the contract authoring process 120 is used

25 by the exchange 10 to produce contact genera and associated species. Alternatively, certain business-to-business exchanges can use the contract authoring process 120 to author their own contracts within the parameters of the exchange and any government regulation. One advantage is that the

30 business-to-business exchanges might possess better knowledge

concerning trading practices involved in the trading particular

products in the business-to-business exchange. This level of

customization can make the contracts more tradable and desirable

than an exchange employee authoring all the contracts.

5   Referring to FIGS. 7A-7D, user interface screens, e.g., web

pages are shown. FIG. 7A shows a user interface 140 to enter new

orders into the system 10 is shown. The user interface 140 is

implemented as a HTML or equivalent web page and includes fields

for specifying an order type 142, i.e., buy or sell as well as

10   order terms 144 such as delivery, location, quantity, price,

product, product species, delivery month, freight terms and

units. The price can be specified in a number of ways such as a

value, e.g., number; a contract (market price) or a contract

market price plus or minus a value, e.g., a relative price.

15   In addition, there is a comment field that can be used to enter

restrictions or qualifiers on the order. The system can also

generate an order confirmation page as shown in FIG. 7B. Other

screens include a web page that depicts the order book for a

product, (FIG. 7C) as well as a page that depicts product

20   specifications (FIG. 7D).

        Referring to FIG. 8, the exchange 10 includes a matching

engine 150 that works with the order types and qualifiers, as

shown in TABLE 2 below. The matching engine 150 receives 152 an

order and attempts to match 154 the received order with orders on

25   the opposite side of the market that are queued within an order

book 155 in the system in accordance with a priority as set forth

below. If the system can form a match 156, the match is returned

158. Otherwise, if the system cannot form a match, the system

determines 160 whether there are more potentially matchable

30   orders on the opposite side of the market that can be matched to

the received order. If there are additional orders, the process will fetch 162 the next order. Otherwise, the process will store 164 the order in the order book in a priority, as specified below.

TABLE 2

ORDER TYPES AND QUALIFIERS		
Qualifier	Types	Description
Market Direction	BUY	Indicates the intention to initiate a purchase or offset a short position.
	SELL	Indicates the intention to initiate a sale or offset a long position.
Quantity	Value	Indicates the quantity to purchase or sell. Subject to other qualifiers, any unsatisfied quantity remains in the order book to be matched by an opposing order.
Price	LIMIT	Limits the order to be filled at a given price or better.
	MARKET	Quantity to be filled should be filled at any available price. If sufficient opposing quantity is available in the order book at time of entry, the order is filled on the available quantity with any balance CANCELLED.
Trigger Action	Not Specified	System immediately attempts to find an opposing order which satisfies the order specification.
	STOP	Systems delays finding an opposing order until the market trades at the activation price. Requires both a LIMIT parameter and activation price parameter.
Duration	Not Specified	Order is retained until the end of day as defined for the contract genus.
	FILL or KILL	Order is not retained in the order book.
	GOOD UNTIL	Order is retained until the time indicated.
	GTC	Order is retained until its full quantity is filled.
Status	Not Specified	Order is active in the order book.
	FILLED	Order has been satisfied.
	CANCEL	Order is removed from the order book.
	SYSTEM HOLD	The order remains in the order book, but cannot be matched pending further system action. Used typically for risk management purposes.

ORDER TYPES AND QUALIFIERS		
Special Qualifiers	HIT OR TAKE	Immediately enters an order to purchase (TAKE) or sell (HIT) all the quantity presented as the best-available price. The order is CANCELLED for all unsatisfied quantity if the previous bid or offer price is no longer available at execution time.
	ALL or NONE	If insufficient opposing quantity is available in the order book at time of entry, the order is immediately CANCELLED by the system.
	ONE CANCELS OTHER	Links several orders together so that the partial or complete satisfaction of any order immediately CANCELS the linked orders.

Referring now to FIG. 9, the matching process 154 determines 154a whether the received order and an order are at the opposite side of the market fetched from the order book have the same level of specificity. If the orders have the same level of specificity 154b, the orders are passed to a conventional matching process 154c to match the order in accordance with price time priority as would be currently performed on a typical futures market exchange. However, if the process 154 determines 154a that the received order is more generic than the order from the order book 154d, and further determines 154e that the received order is enabled for more specific matching, then the received order will be sent to the matching process 154c to match positions with the order from the order book. If orders match 154f, the positions are recorded in each trading account 18 with the degree of specificity on the order that was in the order book and the match is returned 154g. If the orders do not match, the received order will be tested 154f against other orders in the order book as above. If the orders in the order book do not match the received order, the received order will be placed in the order book, as described above, in accordance with time price priority considerations described below.

If the process determines 154a that the received order is

more specific (e.g., the order book order is more generic) than the queued order in the order book, the process will determine 154h whether the queued order is enabled 154i for more specific matching. If the queued order is enabled for more specific

5   matching the orders are sent to the matching engine 154c. If there is a match, the positions are recorded in each trading account 18 associated with the orders, with the degree of specificity as set forth on the received order. Otherwise, if there are no orders that match the received order, the received

10   order is placed in the order book.

Each contract genus can use either a price-time or pro-rata order-matching algorithm to find matching, offsetting orders. Trades are executed at the best available price. If there are multiple orders at the same price, the earlier-posted order has

15   priority. Orders are entered into a contract genus order book. If the order contains all the elements necessary to completely define a contract species then it is a candidate for matching with an offsetting order at the other side of the market. For example, a trader 16 can place an order for benzene futures as

20   specified in the example in above. If the trader 16 places the order to include all of the Grade (e.g., astm 2359), Delivery Location (e.g., Houston), and Delivery Month (e.g., July 2000) parameters it would be considered fully specified. Such an order could be matched against an offsetting order that referred to the

25   same set of fully specified parameters. Orders matched in this manner are analogous to the procedures used in conventional futures order matching.

TABLE 3

MULTI-SPECIES ORDER MATCHING RULES		
Activating Order is:	**Resting Order is:**	**Resulting Match and System Behavior**
Same Specificity	Same Specificity	The orders are matched. Each position is recorded in each trading account 18 with the degree of specificity on both orders.
More Generic	More Specific	If the activating order is more generic and enabled for 'more specific matching', then orders are matched and positions recorded in each trading account 18 with the degree of specificity on the resting order; otherwise activating orders are placed in the order book.
More Specific	More Generic	If the resting order more generic and enabled for 'more specific matching', the orders are matched and positions recorded in each trading account 18 with the degree of specificity on the activating order; otherwise activating orders are placed in the order book.

In addition to single contract species matching, the matching algorithm supports matching orders across contract species. Multi-species order matching rules are shown in TABLE 3. Such an order can be entered into the contract genus order book, without all the elements necessary to completely define a contract species. Again, consider that a trader 16 can place an order for Benzene as specified above. If the trader 16 places the order to include the Grade (e.g., astm 2359) and Delivery Month (e.g., July 2000) parameters, but indicates the Delivery Location as ANY, it would NOT be considered fully specified. This order could be matched against an offsetting order that also contained ANY as the Delivery location parameter.

The exchange 10 allows a trader 16 to specify that an order be matched against more specific orders. In the example considered here, either the Houston or Corpus Christi delivery points, if specified on the contra-order, could be deemed acceptable matches. Multiple and cross contract species matching impacts position offset rules. If a trading account 18 has both specified and unspecified positions in it, position offset will

depend on whether the long or short is more highly specified, and whether the long or short determines actual delivery terms.

Referring now to FIG. 9A, a position offsetting process 180 is shown. In this example, the process 18 assumes that the short

5 interests sets unspecified contract terms at the time of contract delivery. The position offsetting process 180 is used to offset positions from a common trader 16 or a common subscriber in a common market. The position offsetting process 180 determines 182 whether the subscriber has a long position and a short

10 position in the market. The process also determines 184 the relative specificity of the positions. If a long position in a market has the same specificity 186 as a short position in the market, and if so, the positions are set 186 to offset and the offsetting positions are recorded 188 in the trading account 18

15 of the trader 16. If the long position is more generic than the short position 190, the positions will not offset since the exchange cannot determine that the remaining positions will result in a correct match between short and long positions at delivery time. However, if the long position is more specific

20 192 than the short position, the positions will offset upon trader instruction 194 since the exchange 10 can be certain that the remaining positions will result in a correct match between short and long positions at delivery time. TABLE 4 shows offset rules.

TABLE 4

MULTI-SPECIES POSITION OFFSET RULES*		
Long Position is:	**Short Position is:**	**Resulting Offset**
Same Specificity	Same Specificity	Positions offset.
More Generic	More Specific	No offset. Exchange 10 cannot be certain that the remaining positions will result in a correct match between short and long at delivery time.
More Specific	More Generic	Positions offset upon trader instruction. Exchange 10 can be certain that the remaining positions will result in a correct match between short and long at delivery time.

The Exchange 10 can permit certain trades to be matched away from the exchange 10 order book. In particular EFPs, Block Trades, and other adjustments can be posted to the exchange clearing system without passing through the exchange's matching engine. Exchange of futures for physicals (EFPs) and block trades are particular trades that can be done outside of the trade matching system, but which are entered into the trading system after they take place. Both parties to the trade report an EFP or block trade to the exchange 10 so that open interest and position information can be updated accordingly. The exchange 10 verifies that sufficient assets are available in each subscriber's trading account 18 before allowing the trade to be cleared.

An ex-pit is a notification of a change to an already cleared trade. Changes may include the subscriber to whom the trade was attributed; the price at which the trade was executed; or the quantity traded. Both sides of the original trade need to agree to price and quantity changes. EFPs, ex-pits and block trades are recorded as special trade types. Ex-pits transactions generally are not broadcast to the entire market. The exchange compliance system monitors these trades to ensure that they

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comply with exchange rules.

Confirmation messages are generated upon order entry and execution. The Exchange 10 can electronically deliver messages via, E-mail, fax, beeper, personal assistant, etc. The messages are sent to the executing trader 16 and to the subscriber for whom the order was placed. Messages may be sent to the guarantor or others upon request.

Orders may be modified prior to being matched. If an order is modified, it loses its position in the order book unless the modification is to lower the order quantity. Orders may be canceled for any unsatisfied portion before being matched. In certain risk management circumstances, exchange 10 can suspend an order by indicating the order as System Held. Suspended orders remain in the order book, but they are not available for matching. If a held order is reactivated, it retains its original time priority.

Referring to FIG. 10, the exchange 10 includes a risk management system 32 to minimize the incidence of credit-induced financial losses, contain losses once they are identified, and ensure continuous market function and financial integrity. The risk management system 32 minimizes the likelihood that a particular subscriber will fail to meet its obligations to the exchange 10. The risk management system 32 includes a system-enforced position and trading limits process 220 that covers all traders 16 acting on behalf of a subscriber. These limits can be set by the subscriber, the guarantor, or by the exchange 10. The integrated risk management also includes system-enforced position and trading limits process 222 that covers all subscribers 12 and may be triggered by monetary deficiencies, 222a positions at or above the limits set for that

entity, 222b or other conditions 222c. In addition, the risk
management system includes a real time or near-real-time credit
checking process 224 that checks subscriber positions and
available assets. The credit checking process 224 verifies
credit, positions and available assets at order entry, upon
significant market movements, and at the end of every trading
day.

The exchange 10 measures risk in a number of ways.
Thresholds for various risk parameters are set 226 for each
trader 16 and each subscriber. There are default thresholds that
may be changed for each and every entity at the discretion of the
exchange 10. Thresholds include total positions, net positions,
total dollar holdings, market concentrations, and asset value
changes. Risk fluctuates several ways for a given trading
account. For example, positions held in the account may change
in value, the assets held in the account may change in value, and
the exchange 10 may increase margin rates, which will require
additional funds to be deposited.

To minimize large fluctuations in parameters, and thus large
movements in risk, the exchange 10 measures each of these
conditions independently at regular intervals (e.g., daily,
hourly, upon limit price move, etc.). The risk system 32
revalues 228 assets on account, marks-to-market the positions 230
in each trading account, determines 232 the profit and loss of
current trading, and recalculates 234 the margin requirement of
the subscriber's portfolio. A comparison 236 is made of the
asset value in the account versus the required margin, and, when
a deficiency occurs 238, the exchange 10 requires additional
assets of the subscribers 12. To limit the losses that arise
from the inability of a subscriber to perform (e.g., pay for

trades, cover margin deficiencies, or delivery default), exchange 10 can establish an initial margin, e.g., at least twice the daily limit move permitted for each contract species.

Asset valuation also includes a capital charge process 236

5   that reflects both the cost of liquidating the asset, and the possible value changes such assets may incur before they can be sold. When a deficiency is noted in an account (i.e., required margin exceeds asset value), the subscriber will be asked to increase the asset value in the account.

10   Referring to FIG. 11, the exchange 10 clears and settles every transaction and serves as the counterpart to every trade. The exchange clearing and settlement system 30 is a fully integrated processing engine for exchange clearing and settlement functions. The exchange 10 uses different margin protocols 32a.

15   For example, a conventional cash-based margin protocol can be used. The exchange 10 can also use an Asset-based protocol, as discussed below. The protocol used is determined by the contract genus. The Asset-based Margin Protocol (AMP) replaces daily pays and collects of margin that occurs with the cash-based protocol,

20   with asset verification at the subscriber and guarantor levels. The Asset-based Margin Protocol can reduce the costs of participating in futures markets without compromising risk management.

The clearing system 30 includes a settlement engine 30b that

25   performs a full settlement run 250 daily, after cessation of trading. The clearing system 30 also includes an engine 30c to determine positions of all subscribers on a periodic basis as well as those of subscribers during trade clearing. The clearing function also includes an asset valuation/deposit engine 30d that

30   updates asset values in relation current market conditions for

use with margin requirements and manages deposit and withdrawals of assets.

Exchange clearing and settlement systems 30 provide constant, real-time gross and net financial data. The exchange 10 system automatically marks-to-market all open positions. The clearing system 30 determines margin. With a cash margin protocol, at the end of every day, the system sends to subscribers 12, their depository or guaranteeing banks, as the case may be, and/or to their FCMs their debits and/or credits, and the resulting balances in, each subscriber's account. In the CMP, position information is disseminated and each subscriber or its guarantor will make or receive daily pays or collects. These transfers will take place through the exchange depository bank. In the AMP, position information will be disseminated, but no daily pays or collects will take place so long as sufficient assets are already identified. Subscribers 12 or their guarantor will be required to make payment or provide evidence of additional assets when a subscriber needs to meet new margin obligations.

As soon as any portion of an order is filled, the position for that subscriber is posted to the trading account 18 indicated by the trader 16 on the order. When the contract species can result in an offset, the trade is liquidated with any resulting credit or debit identified as a realized gain or loss in the subscriber's trading account. In addition to trade posting, positions may be altered by making or taking delivery of the underlying product, accepting cash delivery for the position, or executing an exchange-for-physical against the position. These alterations will trigger position adjustments and are treated by the clearing system 30 as though the trades were matched through

the exchange matching engine.

Assets may be placed in or released from a subscriber's trading account 18 at any time provide that a release will not bring assets below a required margin amount. Assets will be recorded in face amounts (when appropriate), and in equivalent value to reflect the capital charge applied to each asset. An asset inventory will be maintained for each trading account. Assets may be limited to covering a single contract genus or a specific delivery commitment, or may be applied across multiple products. When determining a subscriber's excess or deficiency, more restricted assets will be applied first against their allowable contract genus, and then less restricted assets will be applied.

An initial margin can be set at a minimum of two times the daily price limit move for each contract species held in a subscriber's trading account 18. A variation margin will be calculated at least daily and applied to the subscriber's trading account. For contract genera that employ the Asset-based Margin Protocol, the margin maintenance is set at 100% of the initial margin rate as sufficient assets must always be available. Contract genera that employ the CMP will have maintenance margin levels set at 75% of initial margin rates.

Referring to FIG. 12, an asset-based margin protocol process 300 is shown. A trader 16 takes 302 a position in a contact. If the contract genus is defined as clearing through the asset-based margin protocol 304, any profits that accrue while the position is still open are posted as assets in the trading account 18 as an unrealized gain. The unrealized gain can be used to trade with. The profit is obtained when the position is closed out, or at contract termination. As long as the contract position is

open, the trading account 18 is debited with losses or credited

with gains 308. The asset-based margin protocol differs from the

typical futures market, which uses a cash-based margin protocol.

In a cash-based margin protocol money moves from account to

5   account among financial institutions.

At any time during the day or at least twice a day, there is

a mark to market done 310 against a position. With an

asset-based protocol the subscriber determines 312 if there is an

unrealized gain or a loss. With asset-based margin protocol, the

10   system does not make routine daily pays and collects. Rather,

the system accrues 316 net unrealized losses against a

subscriber's assets or credits unrealized gains 316. The

exchange 10 can make on-demand requests for cash payment of

either or both initial margin and unrealized losses (i.e.,

15   accrued variation margin) against the subscriber's assets at any

time. The system will also make demand payments for realized

losses at time of position offset, and permit a subscriber to use

net unrealized gains to reduce or withdraw other assets in the

trading account. The system will make payments for realized

20   gains at time of position offset, but such payments are only

guaranteed at time of contract expiration.

For example, XYZ Corp., a mid-size corporation, wishes to

hedge using exchange 10 benzene futures. The company has secured

a letter of credit ("LC") from its bank for the benefit of

25   exchange 10 that entitles XYZ to maintain a position of up to

$100,000 in benzene futures. At an initial margin rate of $0.40

per gallon, this credit amount translates to a maximum initial

position of 250,000 gallons. The trader 16 for XYZ Corp.

purchases futures on 100,000 gallons of benzene at a price of

30      $2.00 per gallon. Exchange 10 notes in XYZ's trading account 18

that $40,000 from XYZ's letter of credit is allocated to initial margin. With the asset-based margin protocol, exchange 10 does not draw upon the letter of credit. Subsequently, the trader 16 exits the position at $1.90. Exchange 10 advises XYZ that the unrealized loss of $10,000 is due and payable and notes in the XYZ trading account 18 that $30,000 of the letter of credit is again available. Upon receipt of $10,000, the full value of the LC is available to XYZ Corp.

ABC Corp., another mid-size corporation, also wishes to hedge using exchange 10 benzene futures. The company has deposited $50,000 cash with exchange 10. At an initial margin rate of $0.40 per gallon, this translates to a maximum initial position of 125,000 gallons. The trader 16 for ABC Corp. purchases futures on 125,000 gallons of benzene at a price of $1.50 per gallon. Exchange 10 notes in ABC's trading account 18 that $40,000 is allocated to initial margin. Subsequently, the market rises to $1.70. ABC's unrealized gain now equals $20,000. Exchange 10 will advise ABC that it may now withdraw up to $20,000 from the ABC trading account, which is equal to the $20,000 unrealized gain now in that account.

AMP differs from the Cash-based Margin Protocol (CMP) in that daily pays and collects of margin differences are not made. Instead, subscriber assets provided through the subscriber's guarantor are made available to the exchange 10 on demand. All other components of the exchange 10, e.g., risk management system and clearing systems are identical for both margin protocols. The exchange 10 provides direct access to subscribers 12. The Asset-based Margin Protocol (AMP) eliminates cumbersome daily pay and collect procedures that would occur in a cash-based margin protocol.

Exchange 10 performs an end of day settlement run for each contract market. Positions are marked to market, trading profit and loss are computed, and total profit and loss amounts are determined for each trading account. These amounts are added to

5   (in the case of profits), or subtracted from (in the case of losses), the asset value in the trading account 18. This process will precede margin calculations so that the true asset value, including accumulated profit and loss, can be used to compare against requirements to establish an excess/deficit indication.

10   At any time during the day, a profit-and-loss computation can be performed. It can be applied to an individual contract genus, to all contract genera, or just selected subscribers 12. Similarly, it can be applied to any or all trading accounts. Anytime a settlement is performed the trading accounts are

15   updated with the results and the system marks the event. Subsequent settlements are performed by marking to market from the previous mark to the present. When a trade is made, if it is on the same side of the market as an existing position in the trading account, or if there was no pre-existing position, it

20   considered new business and open interest increases by the trade quantity. If in the trading account 18 position already exists on the opposite side of the market, the position is reduced. If the trade quantity is larger than the existing position, the position will switch sides of the market with the resulting

25   position equal to the difference between the originally existing position and the trade quantity. At the close of trading on the last trading day, a full pay/collect will be performed for all open positions in the expiring contract. All open accounts will be closed and balances will be transferred through the exchange

30   10 to the bank accounts of the subscribers.

Any trading account 18 having a position at the termination of trading for a contract species will be required to make (if short) or accept (if long) delivery. All positions require that delivery margin requirements are met by the assets in the trading

5   account 18. The pay and collect process will be performed for both cash delivered and physically delivered products (see contract termination). For physically delivered products, sellers (deliverers) and buyers (receivers) are matched using algorithms specific to the contract genus. The following

10   functions are recorded by the exchange 10.

The receiver indicates that money has been sent. The deliverer indicates that the good have been sent. The deliverer indicates that the money has been received. The receiver indicates that the good have been received and are in proper

15   order. When these four items have been completed, the system marks the positions as delivered, and releases the delivery margin.

Defaults

20   The system 11 handles defaults by a member, e.g., subscriber. Any of the following events can result in a default by a subscriber 12. For example, a subscriber 12 can fail to meet any of its obligations under its Contracts with the exchange. Such defaults occur when a subscriber 12 holds a short

25   contract position and does not tender a delivery notice or holds a long contract position and does not accept delivery or does not make full payment when due. These are examples of monetary defaults. Other monetary defaults include failing to meet minimum margin obligations and so forth. Other types of default

30   events include commencing a voluntary or a joint case in

bankruptcy or filing a voluntary petition or an answer seeking liquidation, appointment of a custodian, liquidator, conservator, receiver or trustee, making an assignment for the benefit of creditors or becoming or admitting that it is insolvent. In

5   addition, an involuntary case of bankruptcy or an involuntary petition would be a defaulting event.

To secure the exchange and its other participating subscribers 12 from financial exposure, the defaulting subscriber 12 is automatically suspended. The suspension may be temporarily

10   postponed by an official of the exchange, e.g., the President, if the official determines that such suspension would not be in the best interests of the exchange.

Referring to FIG. 13, the system 11 includes a liquidation process 340 to close out a position upon termination or

15   suspension of a subscriber 12. When an entity ceases to be a subscriber 12 or is suspended all open contracts carried in the system for subscriber 12 are liquidated, as set forth below. The liquidation process 340 occurs as expeditiously as practicable. There are situations where the default process need not be used

20   since the protection of the exchange does not require the implementation of the default process 340. For example if open contracts are transferred to and accepted by one or more other subscribers 12, with the consent of the exchange or the official determines that the protection of the financial integrity of the

25   exchange does not require such a liquidation; or such liquidation is delayed because of the cessation or curtailment of trading on the exchange for such contracts.

The liquidation process 340 determines 342 if it is necessary to liquidate any open Contracts of a subscriber. If

30   necessary, the exchange proceeds to liquidate the positions of

the defaulting subscriber. If the exchange is unable for any reason to liquidate the open contracts in a prompt and orderly fashion, the official of the exchange may authorize 344 the executions from time to time for the account of the exchange,

5   solely for the purpose of reducing the risk to the exchange resulting from the continued maintenance of such open contracts. The official can hedge transactions, including, without limitation, the purchase, grant, exercise or sale of contracts The defaulting subscriber remains liable to the exchange for any

10   commissions or other expenses incurred in liquidating such contracts. The open contracts are liquidated by placing 346 orders for the purchase, grant, exercise, or sale of contracts within the trading system 11, subject to the rules of the market for the contract.

15   The liquidation process 340 includes other techniques to close out the positions of the defaulting subscriber. The liquidation process 340 can place 348 spread orders for any combination of contracts other than the liquidation contract within the trading system 11 and subject to the rules of the

20   respective contract markets, conduct 350 a uniform second price sealed auction to liquidate open contracts. The liquidation process can offset 352 such contracts against the opposite side open interest on a last-in first-out basis at a price equal to the settlement price on the day such liquidation is ordered or at

25   such other price as the Board may establish. This offset effects mutualization of risk among market participants in this manner allows for orderly disposition of the defaulting subscriber's positions and allows the exchange to operate with minimal capital reserves for handling defaults.

30   If an order for relief has been entered with respect to the

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defaulting person, the exchange will not effect any such

liquidation by book entry except as may be permitted by

governmental regulations. Any liquidation may be effected

without placing orders for execution into the trading system 11,

5   by making appropriate book entries on the records of the company

(including, without limitation, by pairing and canceling

offsetting long and short positions). If it is not possible to

liquidate all net open contracts the company may liquidate such

contracts by taking opposite positions in the current expiration

10   month for the account of the defaulting subscriber 12 and

liquidating the resultant offset positions by a spread. All

liquidations are for the account and risk of the defaulting

subscriber.

15   Payments in the Event of Default

The original margin of the defaulting subscriber 12 and any

of its other assets or credit facilities under the control of the

exchange are liquidated and applied by the company to pay the

amount owing (the "Defaulted Obligation"). If the margin and

20   other assets or credit facilities of the defaulting subscriber 12

under the control of the company are in the aggregate less than

the defaulted obligation, and if the defaulting subscriber 12

fails to pay the company the amount of the deficiency on demand,

such defaulting subscriber 12 continues to be liable for the

25   deficiency.

The amount of the deficiency, until collected from the

defaulting subscriber 12, is met from various sources. For

example, one set of sources of funds can be a loan on such terms

and conditions as the president may determine to be necessary or

30   appropriate; a guaranty fund or insurance proceeds, if any,

received by the company in connection with the event of default giving rise to the defaulted obligation; and a surplus, if any, of the exchange as the Board determines in accordance with the Bylaws to be available for such purpose. The sources can be in a listed order with each such source being fully exhausted before the next following source is applied.

Referring to FIG. 14, an example 400 of the exchange process used in system 11 is shown. Company Inc. decides 402 to trade safflower and olive oil futures on system 11. Its CEO applies 404 to system 11 to become a Subscriber. Company Inc.'s head oil trader, is designated 404 by Company Inc., as its authorized trader. System 11 receives 406 Company Inc.'s application, which includes its designation of a trader. The names of Company Inc., Subscriber, and Trader are forwarded 408 to the NFA for a background check by NFA. NFA also verifies that Company Inc. is an eligible swap participant based on Company Inc.'s financial statements and databases (e.g., Dun & Bradstreet). With NFA's check and Company Inc.'s subscriber agreement complete, system 11 produces 412 a trading account 18 for Company Inc. An administrative user ID and password are provided 414 to Subscriber. Administrative accounts do not have trading privileges. A trading account user ID and password are provided 416 to Trader. Although Company Inc., Inc. has a trading account 18 at system 11, Trader may not enter trades because the company has not opened an account with a custody bank.

The subscriber selects 418 a custodian bank from a list of approved financial institutions (AFIs). The custodian bank opens 420 a system 11 sub-custodial account for the benefit of Company Inc. After receiving a signed account agreement from Company Inc. and verification from custodian bank, System 11 internally

assigns 422 the Account at custodian bank to the Company Inc.
trading account 18.

Subscriber uses a secure Internet connection to system 11 to
authorize Trader to enter trades for the trading account 18.
Although an Trading account 18 has been provided and Trader has
been authorized to trade, system 11's trading system prohibits
Trader from entering trades because the Account has no assets to
cover original margin.

As an internal control, Subscriber restricts Company Inc.'s
trading activity to the safflower and olive oil markets.
Furthermore, Subscriber decides that Trader should be constrained
to trading 20 or fewer contracts per day and a position limit of
20 contracts. Subscriber uses the secure Internet connection to
system 11 to establish these controls.

Subscriber deposits 428 assets in the sub-custodial account
e.g., six Treasury bills of $10,000 each and $5,000 in cash in
the sub-custodial Account. Custodian bank notifies 430 system 11,
e.g., by fax or other manner that the six T-Bills and cash have
been placed in the Account. The notification includes a
description of each asset e.g. face value, CUSIP number,
expiration date, issue date, denomination, and so forth.

System 11 records 432 these deposits using a clearing
administrative screen for asset deposits. The records in the
system 11 always reflect the assets in the account as verified by
custodian bank in its custodian bank capacity. Subscriber also
arranges for an irrevocable Letter of Credit (L/C) to be provided
by Bank for Company Inc.'s positions at system 11 in the amount
of $50,000. The L/C provides that it can be used only to support
margin requirements for Company Inc.'s trading in safflower or
Olive Oil contracts. Subscriber notifies system 11 of the L/C

and stipulates that the L/C is associated with the same Trading

account 18 that Company Inc. previously funded at custodian bank

so that the total amount of Margin Eligible Assets in that

trading account 18 is $115,000 ($60,000 T-bills, $5,000 cash,

5       $50,000 L/C). System 11 receives the L/C from Bank and adds the

L/C amount, less an L/C "haircut", to the Trading Account

"assets" of Company Inc. Trading may now take place.

Referring to FIG. 15, the system 11 will approve Trader's

orders subject to the constraints placed by Subscriber's

10   administrative limits and original margin availability.

Trader places 450 a bid to buy 2 lots of safflower Oil

futures for a delivery date of September 29, 2000. The trader is

willing to take delivery at "Any" location and in "Any" container

type. The trader is willing to pay up to $0.55 per gallon.

15   (Contract specifications are shown in TABLE 4 below.) This limit

buy order is placed 452 on the order book at system 11 and is

disseminated 454 to all market participants. The order displays

price and quantity.

A second trader (already enabled to trade) places 456 an

20   offer to sell 2 lots of Company Inc. oil futures for delivery on

September 29, 2000, with additional parameters of New York

delivery in 10-gallon cans. The asking price is $0.60 per

gallon. Because second trader is willing to take delivery in New

York and in 10-gallon containers, the second trader's bid is also

25   displayed 458 on the order book. This is also a limit order, but

on the sell side of the market. All market participants see that

the market for safflower Oil, New York delivery, 10-gallon cans

is bid $0.55 and offered at $0.60. Company Inc.'s order would

appear on any order book for Company Inc. oil futures for

30   delivery on September 29, 2000 with a more specific delivery

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location or container specification.

Trader decides to increase the offer to $0.57. The trader does this by changing 460 the original offer. System 11 treats price changes as a Cancel/Replace so Trader's order now reflects

5   the time priority of a new order. Because no one else has a limit order in the system 11 at that side of the market for the same price or better, Trader is still the best bid. If there were other $0.57 bids entered before Trader's change, Trader would be behind them in the time priority queue. The system

10   changes the market to reflect the new bid at 0.57 and the offer at 0.60. At this point the second trader (seller) decides to hit the $0.57 bid. The second trader can enter 466 the trade in a number of ways, e.g., by cancelling and replacing the original order that is either a market order or a limit order at $0.57.

15   Referring to FIG. 16, the system 11 performs 480 margin determination for each trader. Company Inc. oil futures have an Original Margin of $1,500. Therefore, two lots will produces an Original Margin requirement of 2 times $1,500, or $3,000. The system indicates 482 that a trade match at $0.57 is possible. A

20   real-time credit check 484 is performed to determine whether Company Inc.'s total Original Margin requirement including the result of the new trade is less than the Margin Obligation Eligible Assets identified in the trading account 18. The check is also performed for the other market participant.

25   Looking at the funds on deposit for Company Inc.'s Trading account 18, the system notes total T-Bill value of $60,000, a $50,000 L/C and cash of $5,000. Since T-Bills have a haircut of 5%, and L/Cs have a 20% haircut. The clearance system 30 produces a total "operating value" of assets equal to $57,000

30   ($60,000 minus 5%), plus $40,000 ($50,000 minus 20%) plus $5,000

for a total of $102,000. The Company Inc.'s order is eligible 488
to be matched, since the operating value is greater than the
Original Margin requirement. Assume for this example that the
second trader does not have sufficient margin 489.

5   If the second trader does not have sufficient Margin
Obligation Eligible Assets present at its Custody Bank to support
the trade, then no trade can occur between these two parties.
The second trader with the insufficient assets has the order
placed 490 on system hold and is notified 492 electronically of
10   the order status and reason. Trade compliance staff is also
notified of the situation.

Referring back to FIG. 15, another market participant third
trader, with sufficient Margin Eligible Assets hits 468 Trader's
bid. Both parties receive 470 an electronic trade confirmation.
15   Upon match, market data is updated 472 to reflect the match. The
last trade price is updated and current volume count is
increased. The match is for the more specific product and
information regarding that product is updated. Subscriber sees
the following Trading Account statement:

20

Cash	5,000.00	5,000.00
Governments	60,000.00	57,000.00
L/C	50,000.00	40,000.00

25

Margin Requirement
Company Inc. Oil 2 long @$1,500.00 ($3,000.00)
Less Open Contract Gains $20.00
Net Original Margin Requirement   ($2,980.00)

30

Margin Availability $99,020.00

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The system 11 collects and/or computes the following information for display.

5   1) Margin Eligible Assets (Cash, Government Securities, Letters of Credit, Foreign Currencies)

2) Any reduction in the Margin Eligible Assets due to haircuts on Government Securities, Letters of Credit, or Foreign Currency
10   amounts.

3) Margin requirements (Original, Delivery)

4) Gains or losses associated with Open positions reflecting any
15   differences between the last mark-to-market and last pay collect.

5) Gains or losses from Closed Contract positions.

For mark-to-market the reference price is determined by the
20   system 11 and may be the last trade price, a computation derived with bids or offers, or external reference prices. All accounts are credited or debited with the amount of the gain or loss. An open contract gain of $20.00 indicates that a mark-to-market occurred since the last pay/collect cycle and that the mark-to-
25   market was in Company Inc.'s favor. Had the pay/collect occurred, then Company Inc.'s cash would show a balance of $5,020.00 and the Open Contract Gains would show a balance of $0. Open Contract Gains may be applied to Margin Availability, but may not be withdrawn from an account.

30

Settlement

Referring to FIGS. 17A and 17B, for Company Inc.'s account, the reference price is now $0.55, which produces a loss of 0.02 per contract, or a total loss of $20.00. The Trading account 18 will be posted 502 with an Open Contract loss of $20.00. At midday, the system 11 performs a scheduled intra-day mark-to-market 504 using reference prices for all futures contracts. No pay-collect is scheduled as a routine part of this mark-to-market, but all account values are updated 506. The system 11 performs three different operations during this process. Funds on deposit are revalued 508 (e.g. to reflect changes in the value of Government securities); positions are revalued 510 using the latest reference prices; and the latest Margin levels are applied 512 (e.g. there is an intra-day change in margin rates).

End of Day Settlement - Company Inc.'s Trading Account

Company Inc. Oil Settlement Price is $0.50		
Loss is 0.05 * 500 gallons * 2 lots = $50.00		
Subscriber sees the following Trading Account statement:		
Funds:	Face	Available for Margin
Cash	4,9500.00	4,950.00
Governments	60,000.00	57,000.00
L/C	50,000.00	40,000.00
Margin Requirement		
Company Inc. Oil 2 long @$1,500.00	($3,000.00)	

Less Open Contract Gains		$0.00
Net Original Margin Requirement		($3,000.00)
Margin Availability		$98,950.00

Subscriber sees the following Trading Account statement:		
Funds:	Face	Available for Margin
Cash	5,0000.00	5,000.00
Governments	60,000.00	57,000.00
L/C	50,000.00	40,000.00
Margin Requirement		
Company Inc. Oil 2 long @$1,500.00		($3,000.00)
Less Open Contract Loss		$50.00
Net Original Margin Requirement		($3,050.00)
Margin Availability		$98,950.00

The safflower oil futures market contract specification calls for daily variation margin payment. Therefore, system 11 clearing process 30 will debit 520 Company Inc.'s Subcustodial account by $50. In the event that Company Inc. did not have sufficient assets in the account, the Exchange would notify 522 subscriber of a payment requirement to be met no later than the next morning. Failure to do so would trigger the default proceedings described below. System 11 has no maintenance level margin amounts for its customers. All variation margin calls must be met regardless of amount.

In the event that the Company Inc. oil futures contract did

not specify daily variation margin payment, Subscriber's account would be marked-to-market as in the Intra-day example. The subscriber's Open Contract position would show a loss of $50.00, making a total margin requirement $3,050.00 and the cash amount

5   would remain $5,000. In either case, Margin availability is the same at $98,950.00. Notwithstanding that variation margin may not be required on a daily cycle, the exchange 11 can reserve the right to make a variation margin call (i.e. perform a pay collect) on any contract market at any time. Furthermore, the

10   company reserves the right to make a variation margin call to any Class B member at any time.

Contract	Specification Category	Specification
system 11 Company Inc. Oil Futures		
	Trading unit	30,000 lbs.
	Container	Railway tank car, 50-gallon drums, 10-gallon cans
	Price quotation	Cents/lb
	Daily price limit	1 cent per pound above or below previous day's settlement price.
	Minimum price fluctuation	1/100th cent ($0.0001)/lb
	Expiration cycle	Monthly
	Last trading day	Eighth last business day of the contract month.
	Last delivery day	Last business day of the month
	Delivery locations	New York, Newark, Los Angeles, Des Moines, Houston, Chicago
	Trading hours	From 6:30 p.m. preceding day to 5:30 p.m.
	Daily settlement time	3:00 p.m.
Note: Pro-forma contract and specifications. For example purposes only.		Note: Specifications are flexible. New specifications can be added to suit market needs. In addition, when placing an order, a buyer or seller can specify "Any" for specifications that they may be indifferent to.

Assuming that Company Inc. defaults by incurring a defaulting event described above in conjunction with FIG 13. For example Company Inc. fails to meet its obligations under its contracts with the system or Company Inc., has a monetary

5   default. The subscriber's contracts will be liquidated unless there are excess assets sufficient in one or more subscriber accounts to cover the amount due, or liquidation of one or more positions will satisfy the subscriber's obligations. In the later two cases, the subscriber will remain in default and will

10   be restricted to trade for liquidation only until a re-application for subscriber status is submitted and approved.

A monetary default occurs if Company Inc. holds a short futures contract position and does not tender a delivery notice on or before the time specified by the exchange or fails to make

15   delivery by the time specified by the system or if Company Inc. holds a long futures contract position and does not accept delivery or does not make full payment when due as specified by the system 11. A clearinghouse will be in contact with Company Inc. to determine the reason for the delivery default. Depending

20   on the nature of the delivery default, the exchange and/or clearinghouse may liquidate the position or use the initial and/or delivery margin to mitigate the situation. In no circumstance does the clearinghouse guarantee that the actual goods specified in the contract are delivered to the long.

25   If the guarantor fails to timely perform with respect to any demand of payment by the exchange system 11 for assets that are in the custody account the guarantor also defaults and the exchange and clearinghouse will revoke its status as an approved financial institution and will seek to recover amounts from the

30   guarantor subject to its agreement with the clearinghouse.

Referring to FIG. 18, a trader has $6,000 in a custodial account and wishes to get short one Five Year Note Contract. The scenario below shows how the system clearinghouse would handle a default. The Default process 530 is designed to eliminate risk

5   to the clearing system by linking daily price limits to real-time collection of initial margin, which is a function of the daily price limits. Five Year Note Contract has daily price limit equal to 20 basis points or $2,000 per contract. All system contracts can have daily price limits.

10   In this example, the initial margin for Five Year Note Contracts is set 532 at $6,000. The trader's custodial account has exactly $6,000 so the clearinghouse approves 534 the trade. All contracts will have an initial margin not less than three times the daily price limit, which equals the maximum loss that

15   could be incurred in two consecutive trading sessions. The prior settlement for Five Year Notes was 92.00. Assume that the day's trading range is 91.80 to 92.20 (20 basis points). The trader sells 536 a contract at 91.80 (limit down) and the market settles at 92.20 (limit up). The maximum loss a trader could experience

20   on the first trading day equals twice the daily price limit (e.g. a sale at 91.80 with a close at 92.20 or a purchase at 92.20 and a close at 91.80). The trader is issued 538 a margin call at the end of the first trading session equal to the $4,000 loss incurred. All system contracts are marked-to-market daily. The

25   system requires that the trader has $10,000 ($4,000 loss plus $6,000 initial margin) in his custodial account by 9 a.m. the next day 539. The sample trader fails to supplement his custodial account with the $4,000 and is therefore in default.

The exchange notifies 540 the trader that his account is in

30   default and is being liquidated. The system 11 enters a market

order 542 to buy the trader's short position back, but the market

is lock limit up at 92.40 and no offer is available. The

exchange does everything possible to liquidate 544 the contract

in a manner that is consistent with mitigating the trader's

5   losses.

If at the end of the second trading session, the exchange

could not liquidate the contract 546 in the open market or find a

suitable hedge to protect itself, the clearinghouse will assign

548 the contract to the opposite side (i.e. long) on a

10   last-in-first-out basis at a price of 92.40. The clearinghouse

thus mutualizes the of risk among market participants. While

this can be used a last resort situation it is effective to

maintain orderly disposition of the defaulting subscriber's

assets. The clearinghouse will attempt all other liquidating

15   processes before resorting to this assignment.

The clearinghouse having assigned 548 the position at 92.40

experiences a loss of $6,000 on this trade. Offsetting this loss

is the $6,000 in initial margin coverage that the clearinghouse

has in the custody account of the trader. The clearinghouse has

20   successfully transferred both the position and liquidated the

loss without experiencing a loss. In all default situations

where the clearinghouse acts in this manner, it is certain to

protect and maintain its financial integrity.

Referring to FIG. 19, the system 11 that runs the exchange

25   10 has a layered set of network and application-level security

processes to prevent unauthorized access to the exchange 10 and

to ensure data integrity and privacy. Specific security

technologies can include firewalls 410, intrusion detection 412,

cryptography 414, and access control 416. Internet connectivity

30   uses a secure socket layer, along with user IDs and passwords.

The exchange 10 includes a secure database containing financial
information.

All data transmissions between a user's computer and the
exchange servers can be encrypted. Using standard web
technology, the exchange 10 includes a network of web servers 420
that distribute the workload of communicating between the
exchange 10 trading system and the users. Load balancing is used
to keep all of the servers working at about the same level,
providing uniform performance and response for all users. One or
more database servers deliver data to fill requests from each of
the web servers and ensure that all data requests are handled
uniformly, so as not to enable a user or set of users any
advantage over any other users. The exchange 10 can add more data
servers, and apportion their use by contract genus on a dynamic
basis. This process will ensure that increased trading levels in
one contract genus can be isolated so as not to affect trading in
other contract genera.

The Exchange 10 can have a disaster recovery plan that is
organized to address Maintenance and quality control, fault
detection, fault isolation and recovery from a system problem.
The system can use multiple redundant installations of software
components and hardware components. The system can also have
redundant databases. The system will include redundant power
supplies, Internet gateways, and other infrastructure components.
The Exchange 10's systems can be implemented at geographically
separate sites.

In one implementation standard PCS and web browsers are the
only technological requirements to access the exchange 10.

Other embodiments are within the scope of the appended
claims.

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